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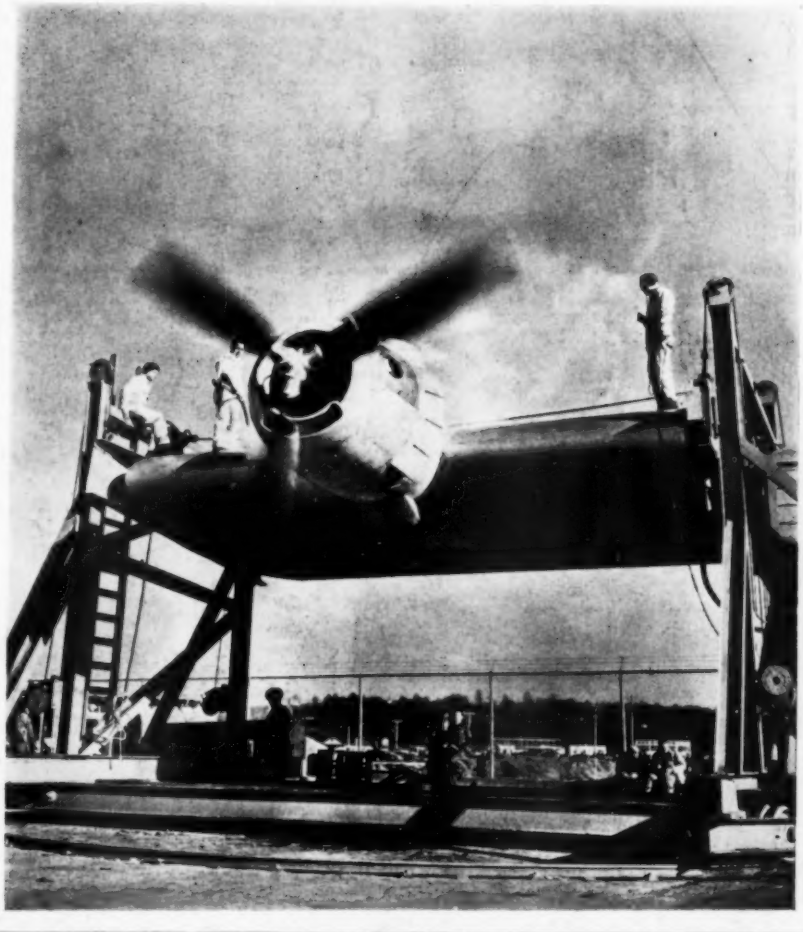

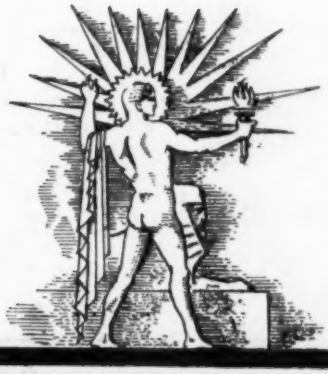

April 11, 1942

Ground Flight

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A SCIENCE SERVICE PUBLICATION

Do You Know?

A corps of 700 *camels* was organized by Napoleon in Egypt.

India, next to China, is the largest *rice* producer in the world.

Sugar, unknown to the Greeks and Romans, was introduced into Europe as a medicine.

In addition to its many confectionary uses, *honey* is an ingredient in various hand and face creams.

Renewed interest is shown by U. S. armed forces in use of larger rigid *airships* as aircraft carriers.

The *shoe-bill*, a big stork-like bird from Africa, is said to use its huge bill to dig lung-fish out of the mud.

There are no true bones in the skeleton of a *shark*—the skeleton is entirely of cartilaginous or gristly material.

Early Norse vessels were steered by one oar on the right side; this became known as the steering board, and later *starboard*.

Special railroad excursions were necessary to carry the crowds who wanted to hear the first *phonograph* at Edison's Menlo Park.

U. S. National Park Service used an *autogiro* for aeiral photography of geological formations, flora, fauna and historic sites.

Cotton can be spun so fine that a pound will make 250 miles of yarn.

A flock of *canvasback* ducks was clocked by an airplane at 72 miles per hour.

Boxers of the *Kyangawa* tribe of Africa wear knives, with the result that the nose of one of the contestants is often lopped off.

Vitamin-rich oil, which is also suitable for varnish making, is contained in the *tomato seed*, according to reports from Brazil.

Oyster culture was practiced before the days of Christ.

Until the 13th century most *sailing* was done with the wind blowing in the direction the vessel was supposed to go.

The *Mother Vineyard*, said to have been growing on Roanoke Island, N. C., at the time of the first English settlement in 1584, is still producing.

During the mating season, Rocky Mountain Big Horn *rams* fight by crashing into each other headlong at speeds of 20 miles per hour or more.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article*

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SCIENCE NEWS LETTER

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MEDICINE

B Vitamins May Have Bearing On Human Cancer Problem

Sores of Mouth and Tongue Often Seen With Cancer Cleared Up in Some Cases By Huge Doses of Yeast

REPORTS hinting strongly that the B vitamins have a bearing on the cancer problem were presented by Dr. Jules Abels, Memorial Hospital, New York City, at the meeting of the American Association for Cancer Research in Boston.

Sores of the mouth and tongue, of the kind often seen with cancer of the mouth and tongue and sometimes called forerunners of cancer, cleared up in some cases when patients were given large doses of brewers' yeast, Dr. Abels reported. Some of the results were spectacular, but in other cases improvement was not so marked. Huge doses of yeast, from two to four ounces daily, were required to effect the improvement. Dr. Abels said the patients were "a bunch of martyrs to take it."

Whether it was the B vitamins or some other substance in the yeast that caused the improvement was not stated. About half the patients who developed the mouth and tongue sores had either been eating poor diets, lacking in vitamins, or had some stomach or liver ailment which would interfere with absorption or use of the vitamins if they did eat enough of them.

Leukemia, the cancer-like blood disease, also has some relation to one of the B vitamins, thiamin. The white blood cells, of which there are far too many in leukemia, cannot utilize thiamin as normal white blood cells can, Dr. Abels has discovered.

Science News Letter, April 11, 1942

Test for Vitamin Need

A SIMPLE test for determining who needs vitamins and who is already getting enough of them was announced by Dr. V. A. Najjar and Dr. L. Emmett Holt, Jr., of Johns Hopkins University, at the meeting of the Federation of American Societies for Experimental Biology. The test is made after a twelve-hour overnight fast.

If, during the thirteenth hour, the person tested is still excreting vitamins via the kidneys, he probably has a good surplus and does not need any more than his diet has been furnishing. If he is not excreting them thirteen hours after dinner, he probably needs to take more vitamins. The test so far has been limited to three of the B vitamins — thiamin, riboflavin and nicotinic acid.

Science News Letter, April 11, 1942

Fat Linked With Cancer

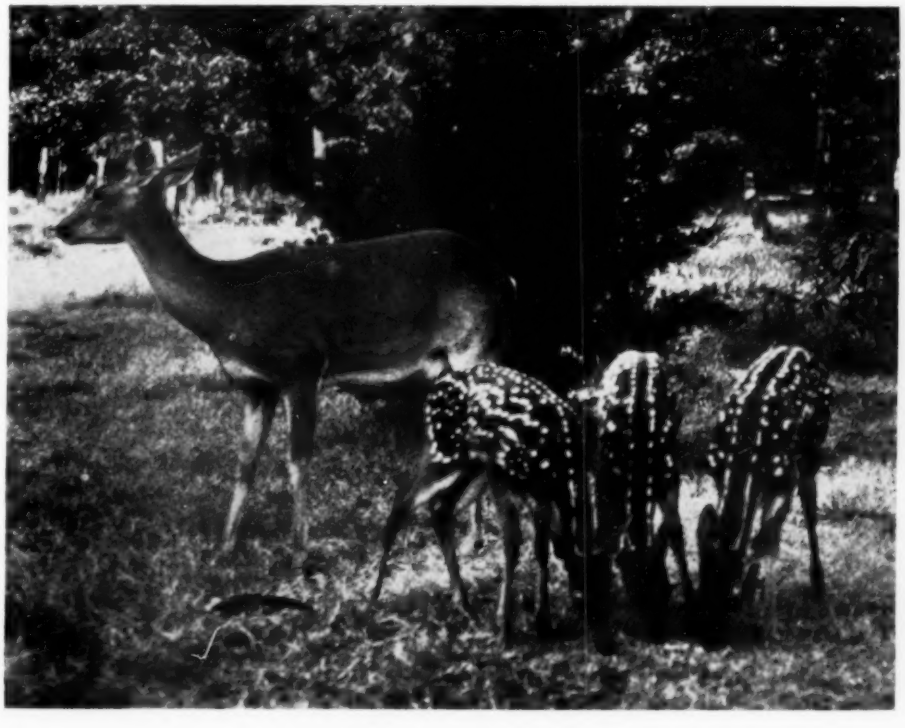
THE DAY when a diet to prevent cancer may be evolved seems a little closer as a result of reports to the American Association for Cancer Research.

Three types of diets: 1. a weight-reducing diet; 2. diets in which a special food chemical is omitted; 3. diets in which certain food chemicals are carefully balanced, are the possibilities seen, although most of them relate to laboratory animals and much of the evidence is still conflicting.

The case for a reducing diet as a cancer preventive was presented by Dr. Albert Tannenbaum, Michael Reese Hospital, Chicago. Human insurance statistics, he noted in a previous study, showed that apparently persons of average weight or less are not as likely to have cancer as those who are overweight.

Turning to the laboratory for further light on this finding, Dr. Tannenbaum put mice on reducing diets. The diets contained all the vitamins, minerals and other essential food elements, but were short on starches and sugars in order to reduce the number of calories. The mice on the reducing diets consumed on the average about two-thirds the amount of food taken by a control group of mice allowed to eat all they wanted.

"Invariably in the underfed groups, tumors (cancers) developed in markedly



THREE OF A KIND

Triplet fawns are somewhat of a rarity among deer, the usual rule being that a doe produces a single offspring at her first parturition, and twins every year thereafter. These three fine youngsters were the "family" of Dolly, a pet doe on the Wichita National Forest, in Oklahoma.

fewer mice; moreover, those tumors appeared at a later time than in the corresponding control group," Dr. Tannenbaum reported.

The reducing diet need not be started at a very early age in order to prevent cancer, the mice experiments suggest. It will be effective if started at any time before the cancers begin to appear.

Science News Letter, April 11, 1942

Reduce Cystine in Diet

A DIET in which only one food chemical, cystine, is reduced to a very small amount will prevent the development in mice and rats of both cancer and the rapidly fatal, malignant blood disease, leukemia, Dr. Julius White, U. S. National Cancer Institute, reported.

Cystine is one of the amino acids, building blocks of protein long known to be essential to growth and for which scientists are now discovering other significance. Cystine differs from most other amino acids in containing sulfur.

On a low-cystine diet, liver tumors from the dye, butter yellow, develop in 70% instead of 95% of rats; leukemia induced by painting the skin with a coal tar chemical develops in 10% instead of over 90% of brown mice; virgin female mice fail to develop any spontaneous breast cancers after 18 months, although ordinarily and when fed a high cystine diet, such cancers develop in 96% of the animals within 10 or 11 months.

These striking results in cancer prevention are due solely to lack of cystine and are probably not due to the growth-stunting effect of lack of this chemical, Dr. White declared.

There is no experimental evidence to indicate that this cancer- and leukemia-preventing effect of low cystine diets applys to humans, Dr. White stated. The experiments, however, show that it is not unreasonable to expect that the growth of cancer can be influenced by various types of dietary substances.

Science News Letter, April 11, 1942

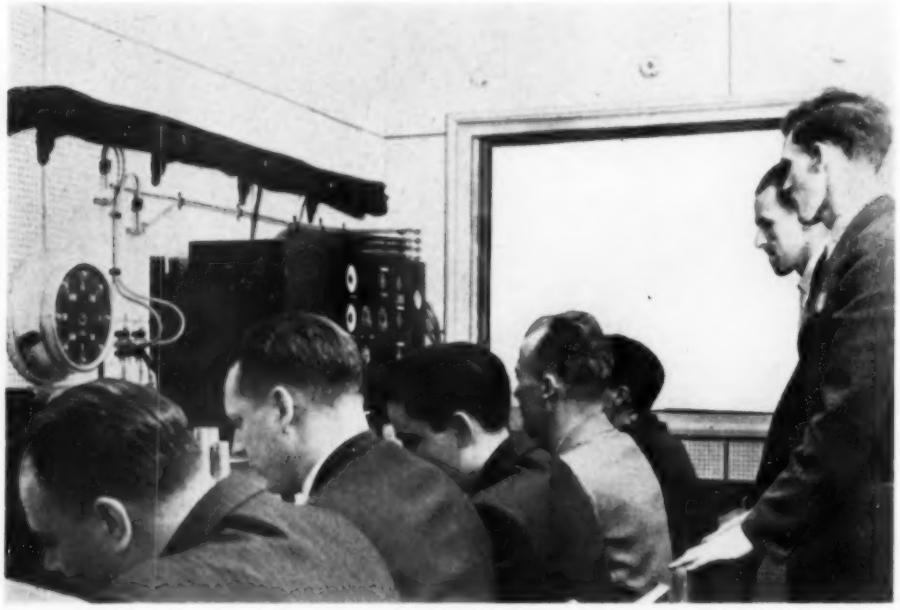
Two-Way Action

CYSTINE, choline, and certain other food chemicals alone or in combination may both prevent cancer and promote its development, according to circumstances, Dr. Dean Burk, National Cancer Institute, declared.

For chemicals with this two-way action, Dr. Burk and associates, Miss Juliet M. Spangler and Dr. Richard J. Winzler, have coined the term "amphicarcinogen."

Whether an amphicarcinogen will act for or against cancer apparently depends on the amount of it in the diet, or in the body, in proportion to the amount of some other chemical. This amphicarcinogen idea suggests that dietary control of cancer, if it is possible at all, will very likely develop along lines of careful balance of various chemicals in food.

Science News Letter, April 11, 1942



"FLIGHT CREW" ON GROUND

These men are at the instrument panel of the test "plane" shown on the front cover of this week's SCIENCE NEWS LETTER. At Boeing's engine test laboratory this airplane engine, mounted on a section of airplane wing and fastened to a house that can be swung around with changing winds, shows performance under conditions of greatest strain—warm-up and takeoff. Ordinarily the test is run with engine headed into the wind as it usually is at takeoff, but tests are also made with cross-winds which cool some cylinders of a radial motor more than others.

ENGINEERING

Avert Threat to Health From Scarcity of Cork

THE threat to the health of both civilians and soldiers through food spoilage for lack of cork from Portugal and Spain for cold storage insulation will be averted by a new product made of materials found plentifully at home, it was announced by the Owens-Corning Fiberglas Corporation.

The new product is made of glass mineral wool, heavily coated with a durable asphalt that has a high melting point. The heat-insulating power of this product is equal to that of the best materials used for cold storage insulation. It is strong, moisture- and fire-resistant, odorless, immune to rot, fungus growth and vermin. It is also light, an important factor when used for roof insulation, since it permits a saving in the steel supporting structures, thus saving steel for the war program.

The need of insulating materials for the protection of perishable foods has never before been so great as now, with an army of several million men and a tremendous shifting population of war workers to feed, in addition to the usual civilian demands.

Low temperature insulation is needed not only for cold storage plants, of which many more will be built, but in the preparation and transportation by land and sea of perishable foods, and in the manufacture of frozen foods which are an important part of our modern diet.

Cold storage and roof insulation are required in military cantonments, in army ordnance factories, in chemical and steel plants, in factories producing airplanes, tanks and armored cars. Many chemical processes require accurate temperature control and therefore good heat insulation.

Science News Letter, April 11, 1942

PSYCHOLOGY

Women Can Learn To Do Almost Any Kind of Work

Job Experts of U. S. Employment Service Have Listed 1,858 Suitable Jobs in War Industries Studied

WOMEN have shown that they can do or can learn to do almost any kind of work. Experts of the U. S. Employment Service have come to this conclusion as they take steps to assist in the mass enlistment of women in America's production army.

This reinforcement of industrial output will be greatly facilitated by a book which will soon come off the rushing Government Printing Office presses.

It is a history-making book. It will aid employers in war and other essential industries in their effort to fit women employees into occupations believed to be suitable for their most rapid employment.

It will tell any woman who wants to enlist in war work where opportunities may be available.

The conclusion of the Federal Security Agency's Employment Service experts doesn't mean, however, that every woman can do any kind of work. Some have more physical strength than others, some have other abilities that must be considered.

It then becomes a matter of expediency—of determining just where women untrained in a particular industry, can be fitted with the least delay.

In the selected war industries covered, a total of 1,858 different jobs are listed as suitable for women. These are divided into three groups. First comes the sort of job, such as accountant or armature winder, where women have already demonstrated their fitness and are regularly employed. There are 158 of these occupations.

The second group, "apparently suitable for women," includes 1317 occupations in which women have been employed in some establishments or in some parts of the country, or in which there is no factor that would seem to bar women. This second group includes such jobs as awning finisher, bevel saw operator or arbor-press operator.

The third group, containing 383 jobs for which women are not ordinarily considered, represents a real achievement of the research in the Employment Service. This classification is much more than a mere statistical sorting of jobs. Back of it stands long years of scientific study by job experts in the Employment Service's occupational research division.

Here are a few of the first names in this important third group: aeronautical engineer, ammunition proof technician, armorer, gage inspector.

It would be impossible for an employer whose aeronautical engineer goes into military service to replace him immediately with a woman. There are not enough trained women aeronautical engineers. Training facilities are already overburdened. The same is true of a gage inspector.

But careful study of the work of a gage inspector has revealed that the job includes a number of different kinds of duties. A gage inspector works on many different kinds of gages and checks them to various degrees of accuracy. He also does such miscellaneous tasks as preparing technical reports.

When the job is broken down, however, the employer can see that some of it could be done by girls with a high school education in mathematics, after three to six months of special training.

In this way many essential men employees could be released. Or the work turned out by one irreplaceable employee could be greatly increased.

Such detailed occupational breakdown studies of critical jobs in which the shortage of man-power (or woman-power) is now holding up war production are now being pushed forward by the Employment Service. Jobs of tool and die making and critical occupations in the shipbuilding industry are being given first priority. Eight such studies are now in process and wil be ready for use very soon. More will follow at top speed.

The list of jobs for women is so arranged that employers in certain industries, such as firearms, industrial chemicals, or petroleum refining, can just run a finger down the page and find instantly where in his own plant jobs exist suitable for immediate employment of women, where they would have to be trained, how long the training period would have to be, and whether the job can be broken down so that women can take over important parts of the work.

Those planning training programs for women can follow through one column and find the information about the normal training period required.

In addition to the jobs in war industries, the list contains 938 occupations in non-war industries where it is important to put women to work to release men employees. Of these 521 are suitable for women, 337 are in the "apparently suitable" grouping where women have occasionally been employed and can be again. Another 80 are in the partially suitable group that can be broken down to employ women on part of the work.

The list is a public document and can be bought from the Government Printing Office for about 35 cents.

Science News Letter, April 11, 1942

MEDICINE

Blood-Clotting Agent Found By Laboratory

A NEW blood-clotting agent obtained in concentrated form from blood from which the corpuscles have been removed, was announced by the Lederle Laboratories, Inc., with the belief it may offer hope for hemophiliacs, or "bleeders."

The new agent is globulin, the natural clotting constituent of blood, but lacking in the blood of hemophiliacs. These unfortunate persons, whose condition is inherited, bleed excessively from minor wounds because their blood contains too little of the clotting principle (prothrombin). No positive protection has been known for these persons, and even pulling a tooth may cost them their lives.

The new clotting globulin provides physicians and dentists with an effective means for stopping the flow of blood from minor wounds in a few seconds. The agent is not effective against bleeding from veins and arteries. Excessive bleeding following extraction of teeth and the oozing of blood from surgical incisions are stopped within a few seconds. by proper application of the clotting globulin.

Globulin was obtained from beef blood, though not in commercial quantities, by Drs. Frederick J. Pohle and F. H. L. Taylor of Harvard Medical School and Boston City Hospital, in 1938.

Science News Letter, April 11, 1942

PSYCHOLOGY—NUTRITION

Color Blindness Improved By Treatment With Vitamin A

Men Turned Down for Defense Jobs Are Able, After Treatment, To Pass the Same Tests They Failed

COLOR vision can be so improved by taking vitamin A that men turned down for defense jobs because of color blindness were able to pass the tests and get the jobs, it was reported in Nashville, Tenn., to the Southern Society for Philosophy and Psychology by Drs. Knight Dunlap and Robert D. Loken, of the University of California at Los Angeles.

This new use of vitamin A in the war effort followed research by Dr. Dunlap and Dr. Loken. Two groups of eight individuals each were matched for degree of color blindness. Those in one group were given one capsule containing 25,000 units of vitamin A each day for twelve days. Those in the other group were given capsules which they thought contained the vitamin but which contained only milk sugar.

Those taking the vitamin A reduced their total errors on a color blindness test from 88 before treatment to 38 afterwards. There was practically no change in the group which had had the sugar.

And here is what happened when six other color blind young men were treated, usually with one capsule a day of vitamin A: Age 24, 100 capsules reduced errors from 10 to 5; age 28, 10 capsules reduced errors from 10 to 3; age 25, 8 capsules a day for seven days reduced errors from 18 to 0 on one test and from 5 to 0 on another; age 23, 25 capsules reduced errors from 12 to 0 on one test and from 12 to 3 on another; age 24, 25 capsules reduced errors from 10 to 0 on one test and from 7 to 3 on the other; age 28, 60 capsules reduced errors from 21 to 0 on one test and from 12 to 0 on the other.

Time is important in some cases, but heavy dosages for a short time may clear up other cases, the investigators said.

Color blindness is not something that always exists in the same degree if it exists at all, the investigators stressed. Cases vary, they said, from those in which there is a very slight deficiency in color vision through the average, which is considered "normal," to cases in which the color vision is so far above the average that they may well be called "super-normal."

Science News Letter, April 11, 1942

Success Lifts Morale

IF A MAN gets a raise in pay, a promotion or even a word of praise and a handshake from his supervisor on the job, his morale is improved for the whole war effort as well as for his particular task.

This was indicated by a report to the Society by Prof. Robert F. Creegan, of Cumberland University.

Every victory in a specific endeavor, said Prof. Creegan, raises the individual's morale for that type of endeavor and for all types of striving which compose the life quest. On the other hand, extreme deprivation in any form, economic, emotional, or other is incompatible with high morale among citizens, he indicated. "The well nourished individual," he said, "makes the good citizen and soldier."

America and other democracies have definite advantages over our enemies as regards morale because in a democracy, the individual citizen knows that he gets a reward and appreciation for the work he does.

Science News Letter, April 11, 1942

MEDICINE

Deaths During Childbirth May Be Due to New Disease

Clots of Blood and Other Material Found Sometimes To Enter Circulatory System and Be Carried to Lungs

A NEW and sometimes fatal disease of childbirth previously diagnosed under such vague terms as "obstetric shock," was described by Dr. Paul E. Steiner and C. C. Lushbaugh of the University of Chicago, at a meeting of the American Association of Pathologists and Bacteriologists in Philadelphia.

Death is caused by clots of blood and other material in connection with childbirth, which gain entrance to the mother's circulatory system and are carried to her lungs. Here extensive damage is done to the blood vessels which may hemorrhage.

Dr. Steiner suggests that the same phenomenon may cause death of the unborn child.

While the authors' conclusions are based on the deaths of only eight mothers and experiments with animals, they will attempt to show that this disease is "a relatively common cause of sudden death during labor."

If they succeed, they will have explained why women in labor sometimes suddenly undergo shock and die for reasons the usual autopsy does not show. Dr. Steiner and Mr. Lushbaugh made their discovery of the cause of death in such cases by the procedure of examining the lungs of the victims with a microscope.

Their examination revealed the blood vessels of the lungs to be clogged with foreign bodies which were identified as having come from the womb. When this type of material was injected into the blood stream of animals, it again passed to the lungs, producing similar effects.

Just how the material got into the blood stream of the mothers is not so clear. The authors suggest it might have been due to unusually powerful spasms of labor which tore the mothers' placental membrane and so permitted uterine debris to enter the blood stream. Here it would be carried immediately to the lungs and lodge in the vessels. Sudden showers of these foreign particles lodging in the lungs would produce the symptoms of shock, preceded by a chill.

Six of the eight mothers the authors studied had chills at the beginning of their illness. It is suggested therefore, that a chill during labor does not necessarily mean the start of a bacterial infection, but rather the clogging of the blood vessels

of the lungs as described. This is particularly likely if the mother has difficulty in breathing.

While the diagnoses of Dr. Steiner and Mr. Lushbaugh were necessarily made after death, they conclude that diagnosis during life should become possible in the future, and with it, a means of saving these mothers.

Science News Letter, April 11, 1942

ANATOMY

Growth-Rate of Human Body Fixed Even Before Birth

Body Proportions Follow Smooth Pattern of Growth From Earliest Moments to Adulthood, Despite Spurts

LONG before we are born, probably from the hour of conception itself, the rate at which our bodies will grow has been established, and with it also the rates of growth of the various parts of our bodies. So declared Prof. Earl W. Count of New York Medical College before the New York meeting of the American Association of Anatomists.

"Normally bodily proportions follow a regular and smoothly-running pattern of growth from conception to adulthood," said Prof. Count. "That is, they adjust to each other in a way to trace a smooth curve on the graph. Spurts of growth, sometimes even disconcertingly obvious to parents of adolescents, particularly boys, do not seem to alter the actual proportions of the body; these alterations have been going on regularly ever since the little animal started; but what might otherwise have taken decades to accomplish is telescoped into the first part of life. Spurts increase the pace; they do not remodel the shape.

"Perhaps this behavior is one of the characteristics by which mammals evolved away from the reptiles. It is frequently believed that reptiles continue to grow in a simple measured way as long as they live."

Cutting of the molar teeth appear to be landmarks in the history of human body growth. From the beginning of pre-birth existence until the first permanent molar appears, one type of curve records the rate of growth. From the eruption of the first molar until that of the second, a rapid spurt occurs; then a second and more complicated change in growth rate follows, until the cutting of the third molar, or wisdom tooth, marks the end of bodily growth.

Strangely enough, the second spurt in growth does not affect the magnitude of the end result, because it also brings with it an eventual slowing-down. If only the first spurt occurred, without the intervening of the second, it would probably "have continued indefinitely into giantdom."

Science News Letter, April 11, 1942

Hormones Are Engineers

SEX hormones, or gland secretions, act as "engineers" in directing the development of unborn animals, Dr. Vera Danchakoff of the University of Lausanne, Switzerland, stated before the meeting.

Dr. Danchakoff worked with a considerable range of animals, including mammals, birds, fishes and amphibians. In general, she found it possible to change the direction of sexual development by injecting the hormone of the opposite sex. That is, if the developing embryo were destined to become a female (which can be told by microscopic examination of its cell chromosomes), it could be induced to develop the external sex organs of a male by sufficiently heavy doses of male sex hormone. The opposite change could be produced by female sex hormone in a genetically male embryo.

Science News Letter, April 11, 1942

Plant Hormone Stimulates

AHITHERTO unidentified sex hormone produced by plants, strongly stimulating sexual maturation in female animals, was reported by Dr. Eliseo T. Gomez, U. S. Department of Agriculture physiologist. Extracts from freshly cut or frozen young oat and corn plants, Dr. Gomez found, would produce evidence of sexual maturity when fed to female rats only three weeks old, which did not appear in untreated "control" animals until they were a good eight days older. Puppies showed similar signs of precocious maturity when they were nursed by mothers (or foster mothers) receiving the plant extracts in their diets.

Science News Letter, April 11, 1942

Obesity From Gland Injury

INJURY to the hypophysis, small but important gland embedded beneath the brain, is capable of causing dwarfism and great bodily fatness, Dr. Albert W. Hetherington of Northwestern University Medical School told his colleagues at the meeting. His findings were based on experiments with rats, whose hypophyses were purposely injured by surgical means. The rats were subsequently killed and the glands microscopically examined. Five animals, in which the glands had been entirely destroyed, had developed as fat dwarfs; the remaining three, which had small fragments of their hypophyses, had developed normal body length, but these also were very fat.

Science News Letter, April 11, 1942

Cyanide Speeds Maturity

CYANIDE compounds, deadly in higher concentrations, seem to have a decided effect in speeding the onset of maturity. Dr. John R. Borland, of Hofstra College and New York University, reported concerning tadpole-to-frog transformations which he had observed in his laboratory.

The tadpoles were fed on cabbage, which is believed to form exceedingly minute amounts of cyanide compound.

Dr. Borland also tried tadpoles on a diet of spinach, with a highly dilute solution of methyl cyanide added to their water. These also became frogs in less than normal time. When the cyanide was added to the water in which cabbage-fed tadpoles lived, it had an additional speeding-up effect on their development.

Science News Letter, April 11, 1942

High Pressure Effects

PRESSURES of 6,000 pounds (three tons) per square inch, instead of the mere 15 pounds of atmospheric pressure, applied to developing frog eggs produce marked effects on the subsequent life careers of the eggs and tadpoles, Prof. Roberts Rugh and Prof. Douglas A. Marsland of New York University stated.

In their experiments, Profs. Rugh and Marsland applied high pressure to frog eggs at various stages of development. Eggs in which the sperm nucleus was present but not yet united with the egg nucleus were especially sensitive, he found. Of such eggs only about 2% ever reached the tadpole stage. After sperm and egg nuclei had united, the eggs proved much more resistant; some 90% of them eventually became tadpoles.

Science News Letter, April 11, 1942

PHYSIOLOGY

Baldness, Not Hairiness, Real Sign of Masculinity

BALDHEADED men, cheer up! Baldness, rather than extreme hairiness, is the real sign of masculinity, at least after the earliest years are over, according to findings of research presented before the meeting of the American Association of Anatomists, by Dr. James B. Hamilton of Yale University School of Medicine.

Dr. Hamilton studied baldness in a large group of men who had failed to mature sexually or who had been rendered sexless in accidents or by unavoidable surgery. In the group of 54 permanently immature cases, not one bald head appeared. They also had less dandruff than normal males.

Male sex hormone was given medicinally to some of these sexually deficient men. They promptly began to lose hair and develop dandruff. In two cases the treatment was discontinued for a time, whereupon the loss of hair ceased, only to begin again when treatment was resumed.

Science News Letter, April 11, 1942

NUTRITION

More Fat Needed in Diet; Necessary to Vital Parts

PREDICTION that both man and his domestic animals are going to suffer from the present trend toward non-fatty diets was made by Dr. G. O. Burr of the University of Minnesota, at the meeting of the Federation of American Societies for experimental Biology, Boston.

Latest discoveries show that fats do more than supply energy. They contain substances, the fatty acids, needed for the health of many vital parts of the body such as the kidneys, reproductive organs and skin. These fatty acids serve as essential building stones of the body.

One of them, linoleic acid which gets its name from linseed oil, is especially important to the health of the skin, Dr. Burr declared. Physicians have already applied this discovery with success in treatment of some skin disorders. Babies with intractable eczema and grown-ups who have "never had a clear skin since they could remember" have been cured of their skin trouble by doses of linseed oil or by diets that supply plenty of this fatty acid through butter, lard and salad oils.

This treatment will not cure every case of skin trouble, Dr. Burr warned, because not all cases are necessarily due to lack of linoleic acid in the diet. He thinks, however, that the average diet contains too much starchy and sweet food and not enough fat of the kind that supplies linoleic acid. The skin effects of lack of this acid, he said, become especially noticeable when humidity is low, as in heated houses, or when some of the vitamin B complex is also missing or scanty in the diet. Common diets contain only about 5% of their calories in fat. This is much too low, Dr. Burr said.

The Army tries to give the soldiers 25% to 30% of their calories in fat. This is equivalent to about 15% of the day's food by weight. Civilians may not need this much, but probably need more than they usually get.

Science News Letter, April 11, 1942

METEOROLOGY

Smithsonian Instruments Measure Moisture in Air

AIR over desert mountains is often as arid as the land beneath it. Studies by Dr. Charles G. Abbot, secretary of the Smithsonian Institution, show that if all the moisture in the air above Montezuma, Chile, were to be brought down in a sudden shower, the rain-gauges there would show a precipitation of less than a hundredth of an inch. Precipitable water in the atmosphere over Washington, D. C., during summer may amount to the equivalent of an inch of rain.

The Smithsonian Institution maintains observatories in many parts of the world, and most of these are still operating despite the disturbances and perils of war. Information on amounts of water in the air is obtained as a by-product of research on total solar radiation reaching the earth. Instruments at the observatories, read several times a day, yield the moisture data because water vapor in the air cuts off certain parts of the solar spectrum.

Studies of these radiation data, as they vary before and after storms, indicate that the water that falls as rain or snow is not imported from long distances, but is gathered up in immediately surrounding regions. Also, the indications are that a rain or snow storm is not long in "gathering"; the moisture is precipitated in a relatively short time, often leaving the air over a given region considerably drier than it was before the storm.

Science News Letter, April 11, 1942

IN SCIENCE

NUTRITION

Shark Livers Promise New Vitamin Supply

THERE will be plenty of vitamins for babies in Australia even if the reported mass drive to the altar by American soldiers and Aussie lasses causes a sharp uptrend in the continent's birth rate.

The Australian News and Information Bureau reports that a new process discovered by an Australian firm will guarantee ample supplies of shark liver oil, rich in vitamins needed by infants.

Eighteen months ago when vitamin oil imports from Newfoundland and Great Britain were plentiful, the shark livers were discarded. Today they are the center of a new industry promising to keep infants healthy and fishermen employed. Fish liver oils are rich in vitamins A and D.

Science News Letter, April 11, 1942

NUTRITION

Extra B Vitamins Would Help Brain Workers

BRAIN WORKERS apparently would be able to do more and perhaps better work, or at least could do their regular work with less fatigue, if they increased their daily ration of B vitamins above the amount required by the average healthy person. Those who perform physical work, however, need not expect any increase in muscular strength or endurance or any lessening of muscular fatigue through taking extra amounts of B vitamins.

These are the conclusions of studies reported by Dr. Ernst Simonson, Dr. Albert Baer and Dr. Norbert Enzer, of Milwaukee.

The Milwaukee scientists gave a large surplus of the vitamin B complex to 12 healthy persons and compared them with 11 people on an ordinary diet. The extra vitamin ration had no detectable effect on any type of muscular activity, neither endurance, recovery, speed, force nor fatigue, but it did prevent fatigue of the central nervous system, which includes the brain.

Science News Letter, April 11, 1942

NCE FIELDS

PHYSIOLOGY

New Navy Goggles Help Night-Duty Pilots

PLASTIC polaroid goggles which help a pilot's eyes get used to the dark have been perfected for the Navy by the Medical Research Section of the Navy's Bureau of Aeronautics.

The goggles are equipped with a special lens with red filter bonded between two layers of the plastic which allows very little light to stimulate the portion of the eye's retina used in seeing in the dark. Without light, that part of the retina becomes adapted to the dark almost as quickly as though in complete darkness. The goggles permit the rest of the eye to see.

Ordinarily, pilots on night duty either begin their watch "blind" or spend 20 to 30 minutes in a dark room to get used to the dark. By using the new goggles, a pilot may remain in a lighted room until ready to go on duty.

The goggles can be made in mass quantities at one-sixth the cost of present-type goggles, which require expensive materials. Three types of interchangeable lenses are available; one permits dark adaptation, a second, a green polarizing filter eliminates glare, and the third is standard clear lens for wind protection. A shipment of the new goggles has been made to England to permit tests by pilots.

Science News Letter, April 11, 1942

CHEMISTRY—RESOURCES

Wood Pulp Supplementing Cotton in Explosives

TO PROVIDE explosives needed to hurl death at the Japs and the Nazis, pulp mills throughout the nation have been converted from their peace-time roles to produce cellulose.

Cellulose, the basic ingredient of many high explosives, is ordinarily produced from the short fibers of cotton, the purest natural form of the substance. War demands are so great, however, that another source, wood, is being called upon.

America's experience in World War I showed that forests could furnish the harmless-looking stuff that booms lethal shells at the enemy. There have been developments during the Armistice years and now B. W. Scribner, chief of the paper section of the National Bureau of Standards, declares that the cellulose obtained from pulpwood "approaches in chemical purity that taken from cotton."

Germany, a nation which must drain the value of every resource, has long been aware of this. Forest products powered her big guns in 1914-1918 and they are furnishing her with explosives today. In fact, some experts believe that Hitler's drive into Norway was made principally to add the store of the Scandinavian forests to his own scanty pulpwood supply.

Fortunately, the United States need never fear running short of explosives. We have the forests, with scientific harvesting methods guaranteeing a never-failing supply of pulpwood, and we have the mills which can be easily adapted to turning that wood into cellulose.

Mills which have turned their facilities over to making this raw material for destruction are guarding their formulas closely. Generally, however, the wood is "cooked" by ordinary sulphite process for making pulp. It then passes through several cycles of chlorine bleaching and is finally subjected to treatment with caustic soda. When finally refined to what is practically pure cellulose, it is turned over to explosives plants for nitration. Cellulose plus nitric acid is cellulose nitrate—gun cotton.

The species of wood used varies according to the location of the mill. In the Northeast, it's spruce; in the West, it's hemlock; in the South, they use Southern pine.

Science News Letter, April 11, 1942

ENTOMOLOGY

Autogiros Found Practical In Spraying of Forests

AUTOGIROS, those quizzical aerial flivvers which hover over the earth like hummingbirds, may one day replace ground machinery in spraying forests.

Department of Agriculture foresters have just completed demonstrations of the spraying of insect-killing arsenicals over woodlands to preserve timber. They said the autogiro-sprayers can be operated so cheaply that it will pay to protect a forest on the basis of the value of a threatened stand of timber rather than on the additional threat of spread to and destruction of forests in nearby areas.

Science News Letter, April 11, 1942

CHEMISTRY

Meat-Tenderizing Factor Of Pineapple Extracted

A NEW progress whereby the meat-tenderizing factor of raw pineapple may be cheaply obtained has been discovered by the U. S. Department of Agriculture. It has long been known that raw pineapple juice will make tough meat cuts tender, due to the presence of an enzyme called bromelin which breaks down the meat protein.

In cooperation with the Hawaiian Agricultural Experiment station, the Department has developed a method of obtaining bromelin from the peels and cores of pineapples. The bromelin is precipitated with alcohol from juice pressed from the peels and cores in a stage of manufacture where the juice is of little value to the canner. The alcohol may be recovered to be used again with more juice.

Science News Letter, April 11, 1942

GEOPHYSICS

Vital Parts of Alaskan Defense Area Photomapped

USING airplanes in every possible way, a geographic expedition explored, photographed and mapped a vital part of the Alaskan defense area in the region of Mt. Hayes last summer in a fourth of the time and at a third of the cost that would have been required by older methods. At the meeting of the American Geophysical Union in Washington, Dr. Bradford Washburn of the New England Museum of Natural History, leader of the party, told his audience how the work was done, and showed them superb color motion pictures of some of the beauty-spots of the country traversed.

Dr. Washburn took his party in by leased planes, with parachutes loaned by the Army. All supplies were parachuted to the men on the ground, and two-way radio communication was constantly maintained with the main base. Work that would have required three months by former methods was finished in three weeks.

A thousand square miles were covered by aerial photographs. This included some areas that were practically unknown and hitherto entirely unmapped because so inaccessible. Mt. Hayes, a rugged, 13,740-foot peak, lies 90 miles southeast of Fairbanks, and is 40 miles from the nearest passable road.

Science News Letter, April 11, 1942

NUTRITION

Life Is Sweet, Anyway

Honey, Maple Sugar, Corn and Sorghum Syrup Will Substitute for Sugar; Fruit More Healthful for Sweets

By EDWIN NEFF

AMERICANS, until recently accustomed to all the sugar they could eat, are learning that life-on-less-sugar is not too sour

Mr. and Mrs. America now slip a lump of maple sugar or a teaspoonful of honey into the breakfast coffee—or have convinced themselves they really need no sweetening at all in coffee or tea.

Their children are learning to reach for a handful of raisins instead of a chocolate drop. There is even a glimmer of hope that young Americans will learn to like fruit drinks instead of sugar-rich pop.

But most active in the patriotic life on rationed sugar will be American housewives. To help them meet their families' craving for sweets, the Department of Agriculture's Bureau of Home Economics has published a carefully tested list of more than a score of reduced-sugar recipes.

A mimeographed copy can be had by mailing a penny postcard to the Consumers Division, Office of Price Control, Washington, D. C., which is distributing the recipes.

These recipes are based on scientific research which proves that fruit, corn syrup, honey, maple sugar and syrup, and sorghum syrup can be partially or completely substituted for sugar. B. H. E. diet authorities are convinced that America will discover that even with less sugar it's a sweet world after all.

Uncle Sam's cooks have learned, for example, that a cup of sugar may be replaced by a cup of honey, or 1½ cups of sorghum syrup, two cups of corn syrup, or a cup of maple syrup. When liquid sweeteners are used, the amount of liquid in other ingredients should be reduced about one-third.

The recipes were designed to make the most of natural sugar in fruits and other foods to help spread your sugar ration. The Bureau of Home Economics has added these sugar thrift rules:

1. Serve cooked fruits hot to get the most of their sweetness.

2. Save syrup from canned fruit to sweeten other fruit, pudding sauce or vegetables.

3. Add a pinch of salt to increase the sweetening power of sugar in cooked food.

4. Be sure all sugar is completely dissolved to get full sweetness.

Here are a few of the Bureau's recipes, worked out in the experimental kitchens at Beltsville, Md., amidst jars of honey, sorghum syrup and neat little piles of buff-colored maple sugar blocks.

Dried Fruit Sandwich

Cook dried fruit and drain. Chop and mix with creamed butter, cottage cheese, or peanut butter. Spread between slices of bread for sandwiches.

Hot Dried Fruit Sandwich

Make sandwiches with dried fruit filling, as suggested above. For six sandwiches, beat up two eggs with ¾ cup of milk, 1 tablespoon of sugar, and salt to season. Dip the sandwiches into the egg mixture and fry in a little melted fat until golden brown on both sides. For an open face sandwich, serve hot dried fruit sauce over a slice of fried bread or toast.

Pecan Pie

1 cup pecans, 3 eggs, ½ cup sugar, 1 cup corn syrup, ⅛ teaspoon salt, 1 teaspoon vanilla, ¼ cup melted butter or other fat.

Beat the eggs, add sugar and the syrup, then the salt and vanilla, and last the melted fat. Place the pecans in the bottom of an unbaked piecrust. Add the filling and bake slowly in a moderate oven (350° F.) for 50 to 60 minutes. The nuts will rise to the top of the pie filling and form a crusted layer.

From the Office of Price Administration comes a suggestion to try less sugar in your coffee or tea, and substitute fresh fruit salad for desserts.

TAPPING

This tree, 10 inches in diameter, is the smallest size of maple tree that it is advisable to tap for the sap that will become maple syrup and sugar. The photograph is from the Department of Agriculture

BRING THE WORLD TO THE CLASSROOM

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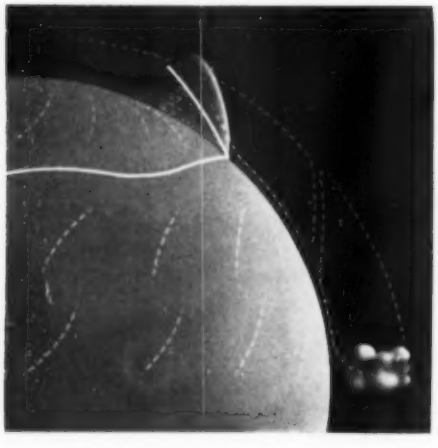

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POURING SAP

In this large container, the sap will be transported to shed or kitchen where it will be boiled down to syrup or sugar. The photograph is from the U. S. Department of Agriculture.

Perhaps at this time a word about saccharin may be wise. It can be used in coffee or tea in place of sugar, but it is not a sugar substitute since it has no food value. Saccharin is a condiment just as are salt, pepper, cinnamon or vinegar. It is 450 times as sweet as sugar, and except when greatly diluted actually tastes bitter to some people. It was discovered at the Johns Hopkins University in 1879 by a German student named Fahlberg. He had been trying to synthesize a certain organic compound, but without success. He noticed, however, that he obtained some crystals in the bottom of the flask with which he had been working, and that these left a sweetish taste on his hand. Upon dissolving them in water, he found the crystals had a sweetening power many times that of sugar. Hence he named his crystals saccharin, after saccharon, Greek for sugar or sweetening. Saccharin was first manufactured in the United States in 1901 by the Monsanto Chemical Company of St. Louis.

Today it is used primarily in mouth washes, tooth pastes and powders, and in medicines where sugar is not desirable. It is also sold in tablet form for diabetics and others who must avoid sugar. The Federal Food and Drug Administration does not recognize its use by manufacturers of foods and beverages except in special products to be prescribed by physicians as part of a special diet. However, experimental evidence fails to show any harmful effects resulting from the use of saccharin.

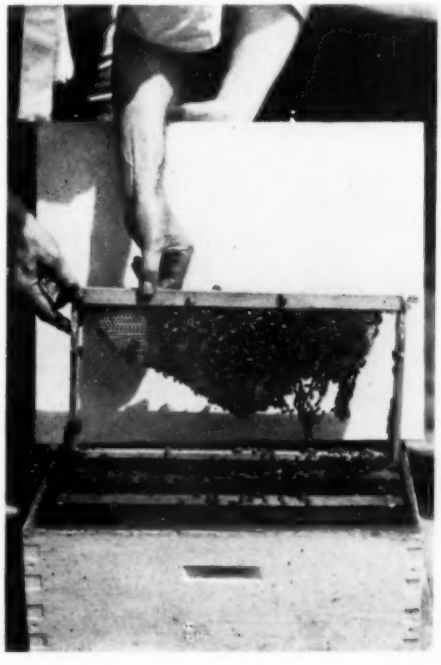
Meanwhile, don't worry about the effect of less sugar upon your health. Doctors and diet authorities, who for years have been begging the public to eat less sugar, are delighted at rationing. They are convinced this country will be actually better off. For while sugar is one of the purest forms of energy available for the human body, there are plenty of other energy sources—sweet potatoes, cornstarch, whole-wheat bread. These foods have an immense advantage over sugar. They not only provide energy, but also vitamins and minerals which refining has removed from sugar.

Nor is sugar necessary for the epicure. Paul C. Standley, of the department of botany, Field Museum of Natural History, Chicago, recalls that "sugar was unknown to the ancient Greeks and Romans except soldiers campaigning in the extreme Orient.

"The fabulous Lucullan banquets of Rome's epicures were graced by no sugar except that contained in honey, and in dates and other fruits!"

Why worry about sugar? People lived without it for centuries.

Science News Letter, April 11, 1942



BUSY

Honey, potent and pleasant sweetener, will be stored in the comb the bees are building.

NEW BOOKS

PHYSICS

By Frank L. Robeson

Clearly written and thorough, this new book will serve equally well as a first year text for either engineering or general science and arts students. *To be published in April. $4.00 (probable).*

PHYSICAL SCIENCE

By Ehret, Spock, Schneider, van der Merwe & Wahlert

College physics, chemistry, geology, astronomy, and mathematics are, in this new text, surveyed and unified by presenting the fundamentals and by emphasizing their interrelation. *To be published in May. $3.90 (probable).*

COLLEGE ZOOLOGY

By Robert W. Hegner

This highly successful basic text for introductory courses in zoology is brought completely up to date with the publication of the new fifth edition. *To be published in May. $3.75 (probable).*

GEOMORPHOLOGY

By O. D. von Engeln

This comprehensive basic text for courses in Geomorphology and Physiography will also be of great use to engineers, soil scientists, etc. It uses the genetic approach throughout. *To be published in April. $4.50 (probable).*

THE EARTH AND MAN

By Darrell H. Davis

This new text for introductory college courses in geography covers both physical and economic geography. The material is built around ideas and facts of human significance and is tied up with live issues from everyday life. *To be published in May. $4.25 (probable).*

ECOLOGICAL CROP GEOGRAPHY

By Karl H. W. Klages

A world concept of field crop distribution is given in this new text, with the reasons, both socio-economic and ecological and physiological, underlying that distribution. The latter are treated in especially full detail. *To be published in May. $4.50 (probable).*

MACMILLAN

MEDICINE

Germs May Be at Root Of Gray Hair Problem

Germs, Ordinarily Harmless, May Destroy Pantothenic Acid, Upsetting Its Ratio to PAB, Causing Graying

GERMS may be at the root of the gray hair problem. This possibility appears in a report by Dr. Gustav J. Martin, of the Warner Institute for Therapeutic Research, New York City, to the Federation of American Societies for Experimental Biology in Boston.

Dr. Martin is one of a group of scientists who last fall reported that lack of a vitamin-like chemical, para aminobenzoic acid, was the cause of gray hair and that doses of this chemical would remedy the condition. Dr. Martin's studies were on rats, while others applied the findings, apparently successfully, to humans with gray hair.

Now Dr. Martin reports, after further experiments with rats, that it is not PAB (para aminobenzoic acid) alone but the ratio of this chemical to another vitamin chemical, pantothenic acid, that is the important factor deciding whether or not rats, and possibly humans, will turn gray. A ratio favoring PAB results in graying, Dr. Martin reports.

The germs come into the picture because certain of these microbes, harmless ones that are normally present in the intestinal tract, are stimulated to grow by PAB. Probably, Dr. Martin explains, these germs destroy pantothenic acid, thus upsetting the ratio of this vitamin to PAB.

Science News Letter, April 11, 1942

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Factor Still "X"

"X," SIGNIFYING unknown, is still the only name that can be given to the anti-gray hair vitamin or food ingredient, according to a report from Dr. F. Peirce Dann, Dr. Ruth C. Moore and Dr. D. V. Frost, of the Abbott Laboratories, North Chicago, Ill.

PAB had no effect on graying alone and slight, if any, supplementary effect with calcium pantothenate, these scientists report of their experiments with rats. Giving all the known B vitamins including PAB did not prevent graying. But brewers' yeast and whole livtr powder each prevented graying. So the scientists again propose an unknown as the anti-gray hair chemical in food.

Science News Letter, April 11, 1942

PUBLIC HEALTH

Disaster-Relief Squadrons Organized By Red Cross

DISASTER relief squadrons, each manned by 42 trained Red Cross workers, are being organized throughout the country.

Modeled after squadrons developed by the Boston chapter, the relief squadrons will use privately owned equipment. Each is equipped with 16 station wagons, tents, trailers, cots, stretchers, first aid and emergency feeding provisions. The squadrons work in cooperation with government and defense agencies.

An agreement between the Red Cross and the National Restaurant Association insures feeding of extremely large numbers of evacuees should that necessity arise.

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● RADIO

Saturday, April 18, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

George W. Bailey, chairman of the radio section of the Office of Scientific Research and Development, will tell of the need for men and women for radio work in the Army and Navy.

Tuesday, April 14, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

MEDICINE

More Than 6,000 Doctors Needed By Army Air Forces

THE ARMY air forces need 2,500 physicians to be commissioned by July 1, and 600 additional physicians each month for the rest of the year, it is reported in the *American Medical Association Journal* (March 28).

This is a total of 6,100 physicians; most of those required must be under the age of 37. More than 1,000 specialists in surgery, ophthalmology and neuropsychiatry between the ages of 37 and 45 are needed.

Science News Letter, April 11, 1942

29 Languages by Linguaphone

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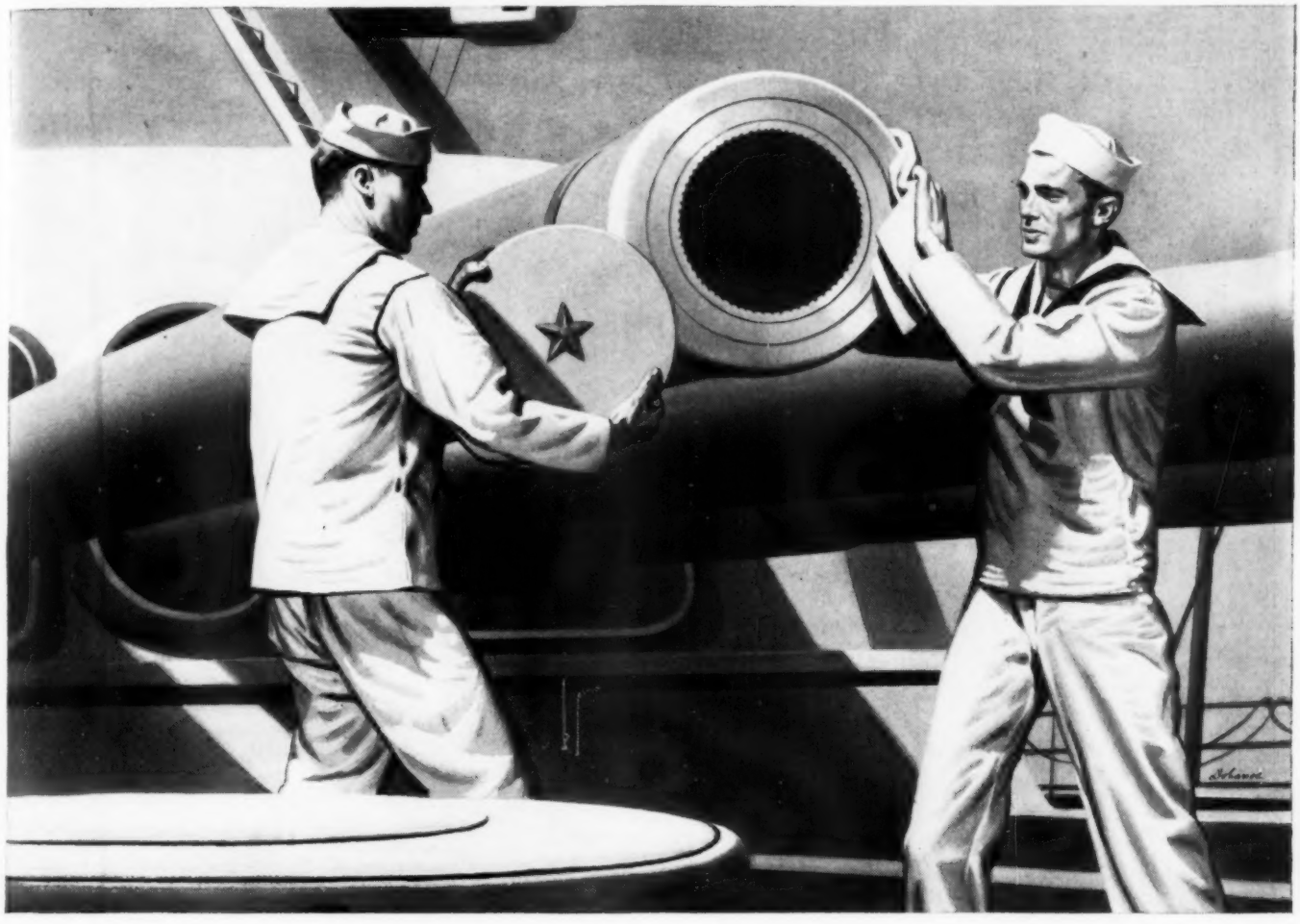


Throats to speak our nation's piece

THERE'S A BLOOD-TINGLING ANSWER to the challenge of Pearl Harbor.

There's a voice that will speak for the men who stood to their guns at Midway and Wake—the don't-tread-on-me roar of an aroused America: the voice of the Navy's big guns.

At cities far from the oceans, in brand-new, Westinghouse-operated factories, will be built much of the Navy's ordnance which will sound our nation's determination to preserve this freedom we have worked so long to build.

Here, in 143 days, plants were built, machines were installed, craftsmen were trained, in an outstanding example of the way Westinghouse "know how" is working three shifts a day for our War Program.

What is this Westinghouse "know how" that brought these plants so rapidly from blueprint to production? It is the hard-earned skill of our craftsmen, trained in the Westinghouse tradition. It is experience and industrial ingenuity. It is the ability to get things done in the best possible way.

You've experienced this Westinghouse "know how" before. You've seen it at work in great power plants, in refrigerators, electric ranges, street railways, elevators, and many another necessity of peacetime living. Till a few months ago, these were but a few of our contributions to the general welfare.

Today this same Westinghouse "know how" is serving the cause of the common defense. It is building parts for tanks and aircraft, binoculars and big guns, lights for airports, and mounts for anti-aircraft guns. It's a $400,000,000 effort . . . and it is as varied as it is big.

Research—the heart of our effort

Today, Westinghouse has become a huge "arsenal of democracy." But one thing about us has not changed—that is our dependence upon the scientists and engineers who man the great Westinghouse Research Laboratories. Now, as in times of peace, their work is the very heart of our effort. We wish we could reveal all the inventions and improvements these men have already perfected and turned over to our armed forces—but they must remain secret.

The work goes on—and *will* go on until America's war has been won!

Westinghouse

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PITTSBURGH, PENNA.

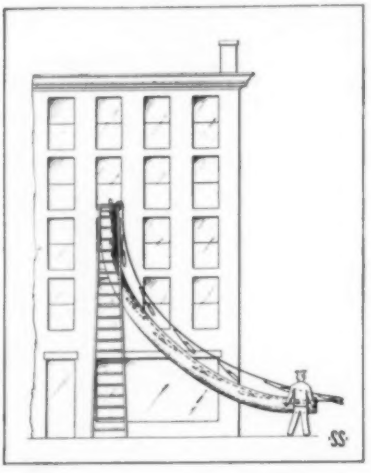
New Machines And Gadgets

Novel Things for Better Living

Galvanized nails may become scarce because the zinc required is needed for war work. Yet nails that will not rust are very necessary for shingles and ships and other such uses. A synthetic resin is now available in which the nails can be dipped, and this resin makes them as rustproof as the galvanizing process. Also it is said not to make the nails obnoxious or toxic to workers who put them into their mouths.

Fishing and propelling a rowboat at the same time requires at least three hands. The number can be reduced to two and thus brought within the capacity of one lone fisherman by means of a contrivance recently patented. The contrivance consists of a small hand-operated outboard motor. The propeller is revolved by turning a crank. The latter is carried on the end of a long bar which brings it within easy reach of the right hand of the standing fisherman. This bar serves also as a tiller to steer the boat. Thus the fisherman can move the boat gently along while with the other hand he trolls for fish.

Detinning of old tin cans can be done more effectively according to a process newly patented. The inventor finds that if the tin is first fully oxidized, it loses its tendency to unite with the iron when heated, and may be more fully removed. Accordingly, he heats the cans to a dull red heat, before they are crushed or compressed. This permits free access of air to oxidize the tin. Also it burns off labels, lacquer and organic material. Then the cans are crushed and melted with a flux containing chemicals that will combine with the tin oxide, such as sodium carbonate or calcium chloride. These form sodium stannate and stannic chloride. The tin can be separated from these by conventional methods. However, there is a substantial market for stannic chloride itself.



Escape from a burning building should be easy and rapid with the patented device shown in the illustration. It will certainly be more rapid than being carried down the ladder and less terrifying than jumping into a tarpaulin held by several firemen. The chute, furthermore, requires no more than two men to hold the lower end. Women and children would doubtless much prefer it. The loops provided along the sides are to pull yourself along in case you get stuck. This would seriously hold up the traffic if a good many others were hurriedly trying to escape at the same time. The device can also be used to rescue persons from a foundering ship.

Warning of an underinflated tire is accomplished in a surprisingly simple and inexpensive manner by a little device just patented. It can be clipped on to the rim of a wheel quickly and easily without marring the vehicle and without the services of a skilled mechanic. It depends on two simple things, first, that a tire bulges out sideways as it deflates; second, on a noise-making spring or clacker, which emits a loud click when bent forwards or back. The clacker is so arranged that the bulging tire bends the clacker outward every time it comes to the down side of the wheel, and the clacker springs back every time it comes to the top. The motorist thus hears two clicks for every revolution of the wheel when his tire needs attention.

Paper towels are made strong even when wet by use of a special synthetic resin, a water-soluble amino-aldehyde type. This is applied either by sprays or other means.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 99.*

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SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

ENID, Okla.—Taxidermy has been a strong point with members of the Enid Biology Taxidermy Club at Enid Senior High School. Deerfoot knives, mounted birds and animals, wild life, desk sets and rattlesnake belts, necklaces and bracelets, have been made and exhibited. Scientists and the public who have seen the wonderful examples of taxidermy produced by some of the club members have acclaimed the excellence of the work. It is not surprising that members of this club have received national recognition. At the recent meeting of the Oklahoma Junior Academy of Science, the honorary AAAS membership was awarded to club member Mary E. Porter. At present the Biology Taxidermy Club, sponsored by Merle M. Boyer, is working on a bird, mammal and reptile collection for the high school.

SPRINGFIELD, Mo.—"Our school has gone all out for defense," reports Ann Lathem, Secretary of the Science Club at Reed Junior High School. "We are organized on a plan similar to Civilian Defense. We have a leader, captains and patrol leaders which form a council. Students have registered and have been divided into patrols. In addition, we are organizing First Aid, Fire Patrol, Messenger Service, Aviation Study, and Current Event Clubs. These are only a few of the 15 units which will be formed." The activities of these groups are sponsored by Winifred Turner.

The Science classes at the Reed Junior High School already are building model airplanes from plans which appeared in the SCIENCE NEWS LETTER.

It should be mentioned again that plans for the scale models desired by the U. S. Navy are available through the State Department of Education which in turn receives the instructive materials directly from the U. S. Office of Education. Any science club sponsor desirous of furthering interest in scale model airplanes can get the details from his state director.

Clubs are invited to become affiliated with SCA for a nominal $2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

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BOTANY

NATURE RAMBLINGS

by Frank Thone

Other Teas

SASSAFRAS bark and various fragrant-leaved herbs may make a bid for the favor of American housewives, as they did at their Revolutionary great-grandmothers' tealess tea-tables, and again in pioneer cabins beyond the reach of easy transportation.

Even when uninterrupted sailings brought tea to early American harbors, our foremothers did not depend entirely on this exotic delicacy. They treasured varied stores of dried herbs and barks, and were able to tickle guests' palates with a wider range of flavors than their descendants can offer. Mulberry flowers, raspberry leaves, and an array of plants now almost forgotten, like Oswego tea, New Jersey tea and Labrador tea, all had their proper place in the well-stocked early American cupboard.

To be sure, many of them were considered medicines. But then, so were tea and coffee, and even tobacco, at first. The frontier between medicine and beverage after all is not a sharp one. Some of the herbs do have medicinal properties, and are still listed in the pharmacopeia; but on the whole their action as drugs is so mild, even so vague, that they probably served chiefly as pleasant ways of smuggling quantities of hot water into the system.

Some of these native American tea-plants, notably sassafras, achieved favor in England. Several of the early exploring voyages brought back cargoes of sassafras roots as a profitable commodity. In one of his most charming essays, Charles Lamb tells of providing treats of sassafras tea to young London chimneysweeps.

If we do take to using sassafras again, there is plenty of it available. It is one of the most common woody plants of the eastern United States, from New England and the Lakes to the Gulf, growing either as a tree or a large shrub. The part used is the bark of the roots, peeled off and dried.

In the South there is another shrub or small tree that may come to figure more or less seriously in the American beverage picture. It is a near relative of holly, known regionally as yaupon. Because its leaves have a relatively high content of caffein, it was considered seriously as a commercial possibility during the first World War, when shipping shortage nearly cut off cheap sources of caffein, needed in the production of one of our most popular soft drinks. In this respect it resembles another holly-family relative, the famous yerba maté, much used as a tea in South America.

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Australian housewives are experimenting with a *scorched wheat* substitute for tea; Australians drink 10 times as much tea as Americans.

A tiny pictorial *map* on a cigaret case guided 17 American airmen piloting several U. S. flying boats in an escape from the Philippines to the Netherlands Indies.

E
THE NAVY "E" pennant flying over the Bausch & Lomb plant is official recognition of accomplishment in Production for Victory. It symbolizes a singleness of purpose that justifies any sacrifice you or we may be called upon to make.
Awarded July 23, 1941.

Miracle in a Quarter-Ounce of Glass

THIS is an ophthalmic lens, designed for the correction of vision. It measures 43x40 mm, 2 mm thick. It weighs 6.23 grams. Its refractive index is 1.5230, its mean dispersion, 0.00895. Its physical characteristics are matters of scientific fact, but they are no measure of the effect it may have on a human life.

For, through the achievements of modern optical science, imperfect eyes are no longer a handicap. The school child, whose mind might otherwise have been dulled by faulty vision, today faces life undaunted, his eyesight defects corrected. Business men, and housewives, go about their daily affairs with eyes equipped for today's tasks. Older men and women, reaching the age when their eyes can no longer accommodate for vision near and distant, need have no fear of loss of visual efficiency. Modern bifocal lenses, skillfully designed and fitted, restore comfortable youthful vision, extend years of useful working time to aging eyes.

So, in addition to its many contributions of scientific optical instruments for gunfire control, research and industrial production, Bausch & Lomb is filling a vital need as America arms for defense. Workers with properly fitted glasses have vision of top efficiency. That means fewer errors in work, less fatigue, greater production.

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•First Glances at New Books

MILITARY SCIENCE—ECONOMICS

ORGANIZING FOR TOTAL WAR—Francis J. Brown, ed.—*American Academy of Political and Social Science,* 287 p., $2 paper; $2.50 cloth. (The Annals, March 1942.) Fundamental stuff on the armed forces of the nation, production, civilian morale and a look at the future. Good for reading, it is also in a sense a handbook useful in understanding the accelerated total war effort.

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ECONOMICS

JAPAN'S INDUSTRIAL STRENGTH — Kate L. Mitchell—*Knopf,* 149 p., $1.50. The material for a cool-headed appraisal of our enemies' sinews of war. This Institute of Pacific Relations compilation shows that Japan's over-all industrial war potential "is vastly below that of the United States and still further below the combined American - British - Chinese-Dutch resources now opposing her."

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POLITICAL SCIENCE—ECONOMICS

THE JAPANESE ENEMY, His Power and His Vulnerability—Hugh Byas—*Knopf,* 107 p., $1.25. An analysis by a newspaper correspondent who concludes that American victory will come from the irresistible pressure of superior power.

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PHYSICS

THE PHYSICAL SCIENCES (Rev. ed.)—Emmett James Cable, Robert Ward Getchell and William Henry Kadesch—*Prentice-Hall,* 754 p., illus., trade $5; school $3.75. A comprehensive survey of the physical sciences including physics, chemistry, astronomy, geology and meteorology, designed to give the reader an intelligent understanding of the world in which he lives and to free his mind of prejudice and superstition. Emphasis is laid on scientific methods of arriving at the truth, on weighing values and reserving judgment until all the facts are known.

Science News Letter, April 11, 1942

TECHNOLOGY

TEXTILE FABRICS (Rev. ed).—Isabel B. Wingate—*Prentice-Hall,* 624 p., illus., trade, $5.35; school, $4. Consumers will be helped to get their money's worth by the information in this book. They will also be helped to understand the cryptic labels, which frequently the salespeople themselves are unable to explain, which are attached to the fabrics by government order as a safeguard. Facts about materials, weaves, dyes and care of fabrics are also given.

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CHEMISTRY

HIGHER CHEMICAL CALCULATIONS—A. J. Mee—*Chemical Pub. Co.,* 184 p., $6. The principles of physical chemistry are set forth in this book by means of worked out examples based on problems actually encountered in the researches that laid the foundations of this science.

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CHEMISTRY

CHEMISTRY — Gerald Wendt — *Wiley,* 300 p., $1.75. This book is a survey course, one of several in the various sciences edited by Gerald Wendt. Its aim is to give, not a smattering of superficial knowledge, but an understanding of scientific method and of the basic concepts of the science. It is not intended for the training of professional chemists, but for all citizens of a democracy in an age of science. For those who may wish to go beyond the fundamentals, a bibliography is included.

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AERONAUTICS

PILOTS' AND MECHANICS' AIRCRAFT INSTRUMENT MANUAL—G. C. DeBaud—*Ronald Press,* 490 p., illus., $4.50. A glance at the instrument panel of one of the new bombers is all that is necessary to give you an understanding of why a rather voluminous textbook should be devoted solely to aircraft instruments, their operation and possible causes of failure.

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PHILOSOPHY

A NEW EARTH AND A NEW HUMANITY —Oliver L. Reiser—*Creative Age Press,* 252 p., $2.50. This is a plea for a new and scientific humanism—the philosophy that draws its enthusiasm and content from the progress of physics and mathematics during the past few decades. "This new world religion attempts to provide a foundation for a universal culture, thus enabling the nations and races of the several hemispheres to plan for and cooperate in the creation of a truly universal civilization." The author is associate professor of philosophy in the University of Pittsburgh.

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CHEMISTRY

THIS CHEMICAL AGE, The Miracle of Man-Make Materials—Williams Haynes —*Knopf,* 407 p., $3.50. A wonder-book of modern synthetic chemistry, telling about all the well-known products including synthetic rubber and the sulfanilamide drugs, how they are made, how they were discovered. It is one of the rare books that can be recommended when an inclusive, understandable and readable book is demanded.

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MILITARY SCIENCE

THE ARMY OFFICER'S MANUAL—A. C. M. Azoy — *Appleton-Century,* 366 p., $2.50. A compact, pocketsize compendium of everything an Army officer needs to know, from where his collar ornaments should be placed to getting his men comfortably under canvas in the field and signalling his commands in battle. Makes interesting reading for anybody, these days.

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AERONAUTICS

THE AERO ENGINEER'S MANUAL — P. H. Simpson—*Chemical Pub. Co.,* 125 p., illus., $2.50. A book of questions and answers intended to fit into the British air training program.

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PSYCHOLOGY

SOCIAL NORMS AND THE BEHAVIOR OF COLLEGE STUDENTS—J. Edward Todd—*Teachers College, Columbia Univ.,* 190 p., $2.10.

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POLITICAL SCIENCE

PUBLIC POLICY IN A WORLD AT WAR —Dwight L. Dumond, ed.—*American Academy of Political and Social Science,* 193 p., $2 paper, $2.50 cloth. (The Annals, Vol. 218).

Science News Letter, April 11, 1942

PSYCHOLOGY

UNDERSTANDING YOURSELF, The Mental Hygiene of Personality — Ernest R. Groves—*Emerson Books,* 279 p., $2.50. By the professor of sociology at the University of North Carolina.

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PSYCHOLOGY

AN INTRODUCTORY MANUAL IN PSYCHOLOGY — Joseph J. Ayd — *Fordham Univ. Press,* 162 p., $1.50.

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